

# NEURODEGENERATIVE DISEASES



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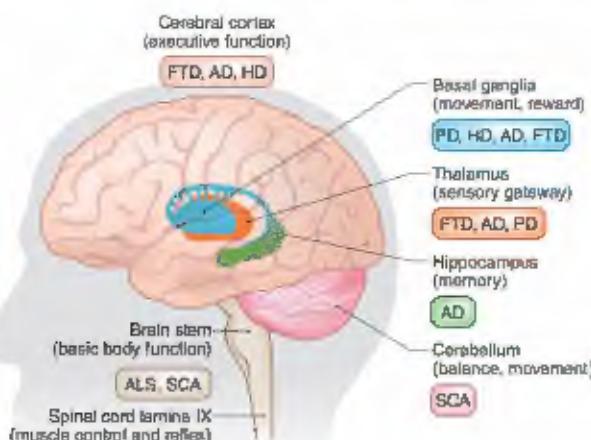
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## **Neurodegenerative Diseases**

Neurodegenerative diseases are heterogeneous neurological disorders, including Alzheimer's Disease (AD), Parkinson's Disease (PD), Frontotemporal Dementia (FTD), Huntington's Disease (HD), Amyotrophic Lateral Sclerosis (ALS), and Spinocerebellar Ataxia (SCA), etc. These diseases cause the gradual loss of neurons in the Central Nervous System (CNS) or Peripheral Nervous System (PNS), which ultimately leads to impairments in memory, cognition, behavior, sensation, and/or motor functions. These diseases have adversely affected the health of millions of people worldwide.



**Fig. 1. Primary brain regions affected in major neurodegenerative diseases.**

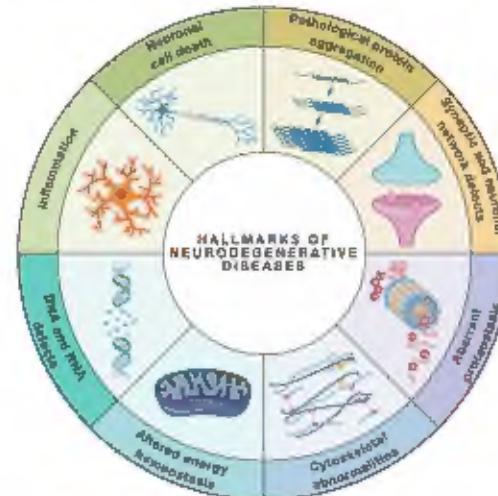


Fig. 2. Hallmarks of neurodegenerative diseases

Decades of research have identified genetic factors and biochemical processes associated with neurodegenerative diseases. A review article published in the journal *Cell* reveals that neurodegenerative diseases have eight major hallmarks: pathological protein aggregation, synaptic and neuronal network defects, aberrant proteostasis, cytoskeletal abnormalities, altered energy homeostasis, DNA and RNA defects, inflammation, and neuronal cell death. These findings provide new insights for the development of novel drugs.

As a leading supplier in the field of drug discovery, TargetMol offers various products related to neurodegenerative diseases:

## Active Compounds

**Neurodegenerative disease related compounds are suitable for new drug discovery and positive controls.**

TargetMol provides compound products with a range of categories and high cost-effectiveness, which cover various targets.

## Compound Libraries

Collections of compounds related to neurodegenerative diseases, suitable for high-throughput and high-content screening to identify potential new drugs.

TargetMol provides compound libraries which are meticulously categorized and exhibit good activity. We also customize compound libraries according to your demands.

## Recombinant Proteins

**Neurodegenerative disease related recombinant proteins are suitable for new drug development and mechanism research**

TargetMol provides recombinant proteins with different species, tags, and expression systems to meet your experimental needs.

## **ALZHEIMER'S DISEASE**

Alzheimer's disease (AD) is a complex neurodegenerative disorder and the most common type of dementia, accounting for 60% to 70% of all dementia cases. It is typically characterized by significant amnestic cognitive impairment. AD has intricate pathobiological features, with its primary hallmarks being extracellular amyloid-beta (A $\beta$ ) deposition forming neuritic plaques and intracellular hyperphosphorylated tau protein accumulation forming neurofibrillary tangles. Additionally, microglia-mediated inflammation, synaptic failure and dysfunction, and mitochondrial dysfunction are also closely associated with the development and progression of AD.

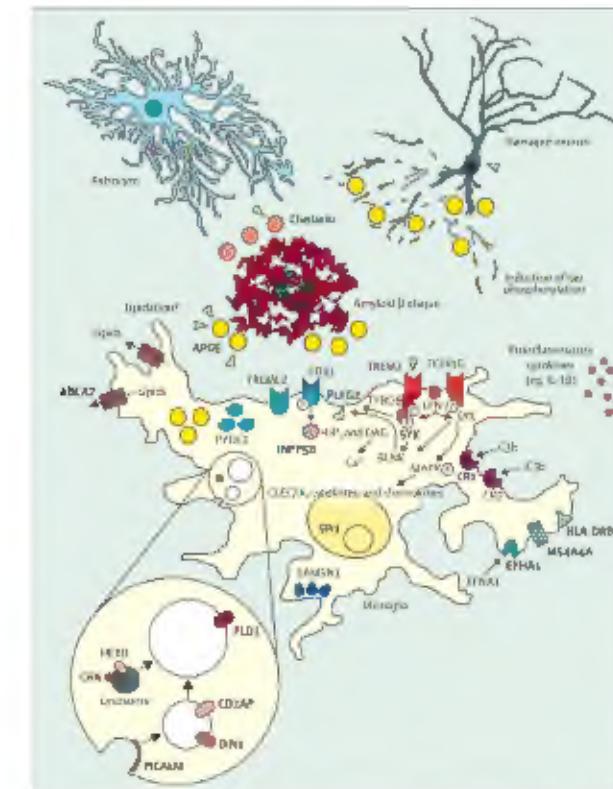


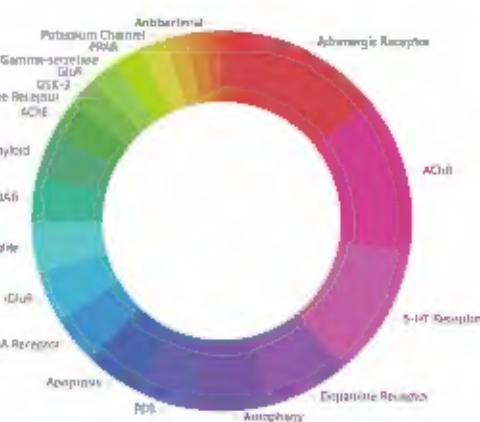
Fig. 3. The cellular phase of Alzheimer's disease

L9840

## Anti-Alzheimer's Disease Compound Library

TargetMol's Anti-Alzheimer's Disease Compound Library, a collection of 900+ compounds with anti-AD activities or acting on main drug targets of AD, can be used for related drug discovery and pharmacology research. NMR and HPLC/LC/MS are validated to ensure high purity and quality.

TargetMol's Anti-Alzheimer's Compound Library can be used for high-throughput and high-content screening, aiding Alzheimer's disease-related drug development and pharmacological research.



## Compounds

ID	Product Name	Product Introduction
T7041	Donepezil	Donepezil is an AChE inhibitor that can increase the levels of ACh, providing neuroprotective effects against Aβ42 neurotoxicity and improving cognitive function in AD patients.
T0229	Rivastigmine	Rivastigmine is an orally active cholinesterase inhibitor that can cross the blood-brain barrier. It is used for the study of mild to moderate Alzheimer's disease (AD) dementia and dementia induced by Parkinson's disease (PD).
T451725	Galanthamine	Galanthamine is a centrally active AChE inhibitor and an allosteric enhancer of neuronal nicotinic ACh receptors, which can be used for Alzheimer's disease (AD) research.
T20993	Memantine	Memantine is an orally active and non-competitive N-methyl-D-aspartate (NMDA) receptor antagonist, which can be used for the study of moderate to severe Alzheimer's disease (AD).
T14199	ALZ-801	ALZ-801 is an orally administrable small molecule Aβ anti-oligomer and aggregation inhibitor. It is a valine conjugated prodrug of tramiprosate and is an advanced and significantly improved candidate drug for the treatment of Alzheimer's disease (AD).
T77042	Aducanumab	Aducanumab is a selective human immunoglobulin gamma-1 (IgG1) monoclonal antibody that targets aggregated forms of Aβ, demonstrating brain penetrability, and can be used for the treatment of Alzheimer's disease (AD).
T77054	Lecanemab	Lecanemab is an IgG1 monoclonal antibody that targets soluble aggregated Aβ, and can be used to study mild cognitive impairment and mild AD dementia caused by Alzheimer's disease.
T6125	Semagacestat	Semagacestat is a γ-secretase inhibitor that inhibits Aβ42, Aβ38, and Aβ40, and can be used for Alzheimer's disease (AD) research.
TQ0026	Mdr-1339	Mdr-1339 is an orally effective Aβ aggregation inhibitor that can cross the blood-brain barrier, making it suitable for research on Alzheimer's disease (AD).
T7003	Leucomethylene Blue Mesylate	Leucomethylene blue mesylate is an orally active second-generation tau protein aggregation inhibitor that can be used in Alzheimer's disease research.
T22204	LY2389575 Hydrochloride	LY2389575 hydrochloride is an mGlu3 negative allosteric modulator with selective and non-competitive properties, which amplifies the toxicity of Aβ and can be used for research on Alzheimer's disease (AD).
T7011	Verubecestat	Verubecestat is a high-affinity, orally active inhibitor of BACE1 and BACE2. It effectively reduces Aβ40 and has potential for use in Alzheimer's disease (AD).
T6249	Avagacestat	Avagacestat is an effective γ-secretase inhibitor that suppresses the production of Aβ42 and Aβ40, making it useful for Alzheimer's disease research.
T2004	Ciproxifan Maleate	Ciproxifan maleate is a selective, orally available, and competitive histamine H3 receptor antagonist used for research into age-related diseases and Alzheimer's disease (AD).
T10630	BuChE-IN-TM-10	BuChE-IN-TM-10 is an effective BuChE inhibitor that can inhibit and disaggregate self-induced Aβ aggregation, demonstrating good blood-brain barrier permeability. It can be used for research on Alzheimer's disease (AD).
T80662	CDD0102 HCl	CDD0102HCl is a selective and effective M1 muscarinic receptor agonist that can be used for the treatment of Alzheimer's disease (AD).
T5297	3-Indolepropionic Acid	3-Indolepropionic acid is a potent antioxidant with strong neuroprotective effects against Aβ, showing potential for Alzheimer's disease research.
T76726	Zagotenemab	Zagotenemab is a humanized anti-microtubule-associated protein tau antibody that selectively modulates tau deposits in the brain and can be used for research into neurodegenerative diseases such as Alzheimer's disease (AD).
T16481	PF-04995274	PF-04995274 is a potent, high-affinity, orally active partial agonist of the serotonin 4 (5-HT4) receptor, with brain permeability, and can be used in research related to cognitive impairment associated with Alzheimer's disease (AD).
T77053	Latozinemab	Latozinemab is a recombinant humanized monoclonal antibody targeting Sortilin with efficacy and selectivity, used for research in dementia and Alzheimer's disease (AD).

## Recombinant Proteins

ID	Product Name	Product Introduction
TMPY-01010	NGF Protein, Human, Recombinant	NGF (Nerve Growth Factor) is a neurotrophic factor crucial for the development, survival, and maintenance of neurons. NGF binds to TrkA to initiate neurotrophic or pro-apoptotic signaling pathways. Both NGF and its receptor are drug targets for Alzheimer's disease (AD) treatment.
TMPY-00135	BDNF Protein, Human/Murine/Rat, Recombinant	BDNF (Brain-Derived Neurotrophic Factor) is a neurotrophic factor that binds with high affinity to the TrkB receptor and with lower affinity to NGFR. It promotes neuronal survival, growth, and differentiation. The expression of BDNF is altered in neurodegenerative diseases such as Alzheimer's Disease (AD) and Parkinson's Disease (PD).
TMPY-04069	Neurotrophin3 Protein, Human, Recombinant	Neurotrophin-3 (NT-3) is a member of the neurotrophin family that binds with high affinity to TrkC, regulating the survival and differentiation of mammalian neurons. NT-3 is a critical mediator in the early development of neurons during neurogenesis.
TMPY-05804	NT-4 Protein, Human, Recombinant	NT-4 is a neurotrophic factor that is crucial for the development, survival, and maintenance of neurons. NT-4 primarily signals through the TrkB receptor tyrosine kinase.
TMPY-01084	TrkA Protein, Human, Recombinant (His)	TrkA is a member of the neurotrophic tyrosine kinase receptor (NTRK) family. Upon binding with neurotrophic factors, it undergoes phosphorylation to activate the MAPK pathway. TrkA is the receptor for NGF and is a therapeutic target for Alzheimer's disease (AD).
TMPY-00751	TrkB Protein, Human, Recombinant (His)	TrkB, a member of the NTRK family, has the highest affinity for brain-derived neurotrophic factor (BDNF) and is involved in the plasticity, long-term potentiation, and apoptosis of neurons in the central nervous system.
TMPY-00945	TrkC Protein, Human, Recombinant (His)	TrkC is a member of the NTRK family, widely expressed in both the developing and adult nervous systems. It has a high affinity for NT-3 and plays a role in neuronal development.
TMPY-02614	NGFR/p75NTR Protein, Human, Recombinant (hFc)	NGFR is a low-affinity neurotrophic factor receptor that acts as a molecular switch to determine cell death or survival through three steps. NGFR is a potential target for Alzheimer's disease (AD) treatment.
TMPY-02221	Beta-amyloid42/Beta-APP42 Protein, Human, Recombinant (His&GST)	Aβ is a toxic peptide prone to aggregation, and its abnormal accumulation in the brain is a major factor contributing to AD pathology. Aβ consists of 39-43 residues, with Aβ42 being one of its important subtypes.
TMPY-02110	Beta-amyloid40/Beta-APP40 Protein, Human, Recombinant (His&GST)	Aβ is a toxic peptide prone to aggregation, and its abnormal accumulation in the brain is a major factor contributing to AD pathology. Aβ consists of 39-43 residues, with Aβ40 being one of its important subtypes.
TMPY-03425	Tau Protein, Human, Recombinant (His)	Tau protein is a stabilizing protein for microtubules and is abundant in neurons of the central nervous system. When tau protein is defective and fails to properly stabilize microtubules, it can lead to dementias, such as Alzheimer's disease (AD).
TMPY-01691	Clusterin Protein, Human, Recombinant (CLU34, His)	Clusterin is a secretory protein belonging to the clusterin family, which is notably involved in the biological processes of degeneration from breast tissue to neurodegeneration in Alzheimer's disease (AD). Clusterin is significantly induced in the state of neurodegenerative diseases.
TMPK-00588	Apolipo ProteinE/APOE4 Protein, Human, Recombinant (hFc)	APOE is a major protein component of serum LDL, VLDL, HDL, and chylomicrons. APOE regulates the expression levels of brain β-amyloid plaques, tau protein, and TDP-43 protein in Alzheimer's disease (AD) patients, and also affects normal brain function.
TMPY-04310	Apolipo ProteinA-IV/APOA4 Protein, Human, Recombinant (His)	Apolipoprotein is the protein component of lipoproteins, primarily serving as a structural component of lipoproteins. It is involved in the transport of lipids through the blood and lymphatic systems and is genetically associated with the risk of Alzheimer's disease (AD).
TMPY-01181	CD40 Protein, Human, Recombinant (His)	CD40 is a member of the TNF receptor superfamily and plays a crucial role in mediating various immune and inflammatory responses. The CD40/CD40L interaction has been found to be essential for Aβ-induced microglial activation, which is an early event in the pathogenesis of Alzheimer's disease (AD).

# PARKINSON'S DISEASE

## Parkinson's Disease

Parkinson's disease (PD) is the second most common neurodegenerative disease, affecting 2-3% of the population aged 65 and older. It is primarily characterized by bradykinesia, tremors in the hands, feet, or other parts of the body, and is accompanied by non-motor symptoms. The neuropathological features of PD include the loss of substantia nigra neurons leading to dopamine deficiency in the striatum, and the presence of intracellular inclusions containing  $\alpha$ -synuclein aggregates. Currently, it is believed that the underlying molecular mechanisms of PD involve various pathways and processes, including  $\alpha$ -synuclein protein stability, mitochondrial function, oxidative stress, calcium homeostasis, axonal transport, and neuroinflammation.

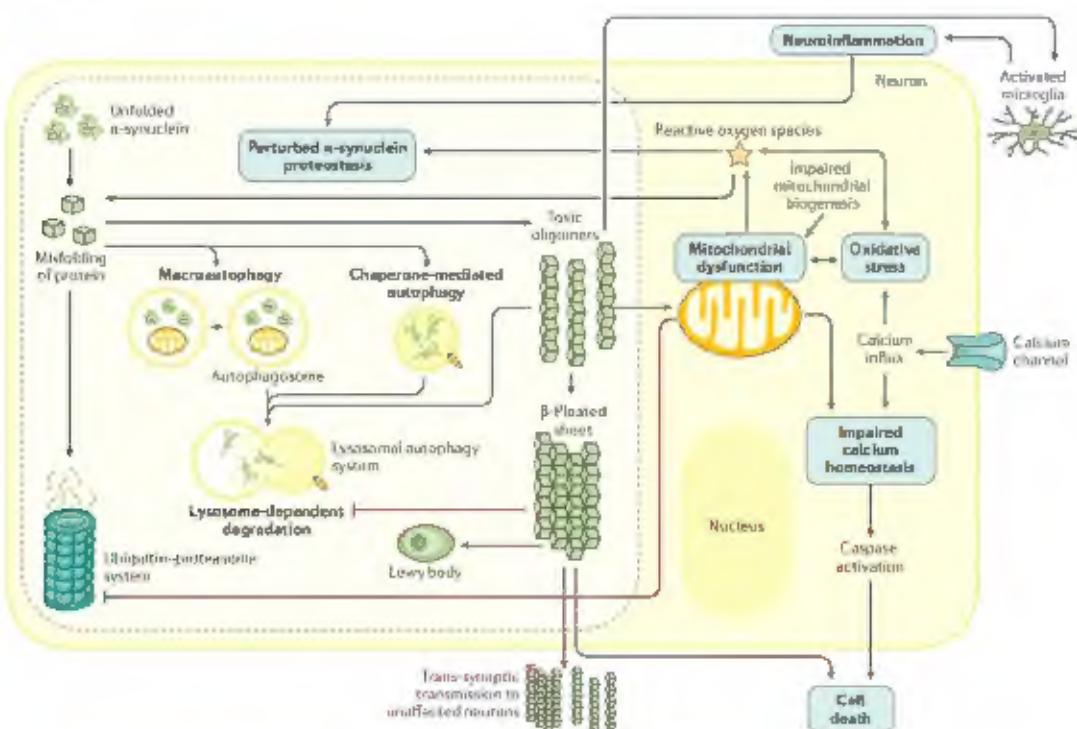


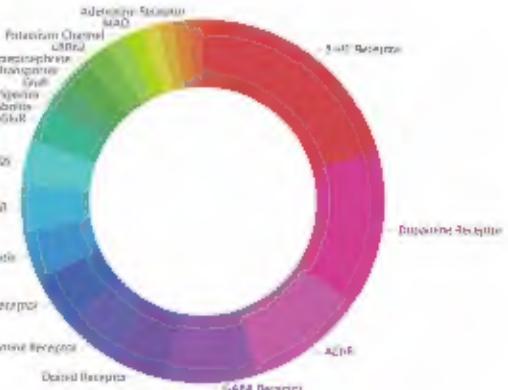
Fig. 4. Molecular mechanisms involved in Parkinson disease<sup>10</sup>

## L9830

### Anti-Parkinson's Disease Compound Library

TargetMol's Anti-Parkinson's Disease Compound Library, containing 800+ compounds with anti-PD activities or acting on main drug targets of PD, can be used for related drug discovery and pharmacology research. NMR and HPLC/LC/MS are validated to ensure high purity and quality.

TargetMol's Anti-Parkinson's Disease Compound Library can be used for high-throughput and high-content screening, aiding Parkinson's disease-related drug development and pharmacological research.



### Compounds

ID	Product Name	Product Introduction
T0848	L-dopa	L-DOPA is the metabolic precursor of the neurotransmitter dopamine. It has oral bioavailability, can cross the blood-brain barrier, and is converted into dopamine in the brain, making it a potential candidate for Parkinson's disease research.
T1517	Benserazide Hydrochloride	Benserazide hydrochloride is an inhibitor of aromatic L-amino acid decarboxylase, commonly used in Parkinson's disease (PD) research.
T1476	Pramipexole	Pramipexole is a selective agonist of D2 dopamine receptors that can cross the blood-brain barrier and is used for the study of Parkinson's disease (PD) and restless legs syndrome (RLS).
T1336	Benztropine Mesylate	Benztropine mesylate is an orally available central anticholinergic agent, an antihistamine, an inhibitor of dopamine uptake, and an allosteric antagonist of the human D2 dopamine receptor. It is used in the research of Parkinson's disease (PD).
T7592	Ropinirole Hydrochloride	Ropinirole hydrochloride is a D3/D2 receptor agonist with potential research value for Parkinson's disease (PD).
T30098	Aplidore Fumarate	Aplidore fumarate is a small molecule dopamine D2 receptor partial agonist, which can be used for the study of Parkinson's disease (PD) and schizophrenia.
T2226	Pergolide Mesylate	Pergolide mesylate is an orally active dopamine D1 and D2 receptor agonist, which can be used for research in Parkinson's disease (PD) and hyperprolactinemia.
T6647	Rotigotine	Rotigotine is a dopamine receptor agonist, a partial agonist of the 5-HT1A receptor, and an antagonist of the $\alpha$ 2B-adrenergic receptor, used for the treatment of Parkinson's disease (PD) and restless legs syndrome.
T14490	Talipexole Hydrochloride	Talipexole hydrochloride is a dopamine D2 receptor agonist, an $\alpha$ 2-adrenergic receptor agonist, and a 5-HT3 receptor antagonist with anti-Parkinson's disease (PD) activity.
T6795	Carbidopa	Carbidopa is a selective aromatic hydrocarbon receptor (AhR) modulator and a peripheral decarboxylase inhibitor. It inhibits pancreatic cancer cells and tumor growth and can be used in Parkinson's disease (PD) research.
T6708	Tolcapone	Tolcapone is an effective inhibitor of $\alpha$ -syn and $\beta$ -amyloid oligomer and fibril formation. Clinically, it is used as an adjunct therapy for primary Parkinson's disease (PD) patients receiving combined treatment with levodopa and carbidopa.
T2216	Entacapone	Entacapone is a reversible, orally active, peripherally acting catechol-O-methyltransferase (COMT) inhibitor, which can be used for the study of Parkinson's disease (PD).
T1119	Rasagiline	Rasagiline is an irreversible, highly effective, and selective mitochondrial monoamine oxidase (MAO) inhibitor used for the treatment of Parkinson's disease (PD).
T6651	Safinamide Mesylate	Safinamide mesylate is a selective, potent, and reversible monoamine oxidase B inhibitor with neuroprotective properties. It can be used for the study of diseases such as Parkinson's disease (PD) and ischemic stroke.
T7060	Amantadine	Amantadine is an antiviral medication and a weak antagonist of NMDA-type glutamate receptors. It promotes the release of dopamine and inhibits the reuptake of dopamine, making it useful in Parkinson's disease research.
T7002	Trihexyphenidyl Hydrochloride	Trihexyphenidyl hydrochloride is an anticholinergic drug used in Parkinson's disease research. It binds to the M1 muscarinic receptor and can be used in studies related to Parkinson's disease (PD).
T6552	Istradefylline	Istradefylline is a selective, orally available adenosine A2A receptor antagonist, used for research in the treatment of drug abuse, sleep disorders, liver damage, Parkinson's disease (PD), and restless legs syndrome, as well as in basic scientific studies.
T0287	Zonisamide	Zonisamide is an effective inhibitor of carbonic anhydrase, with antiepileptic activity, and is valuable in research on epilepsy, seizures, and Parkinson's disease (PD).
T1072	Loxeen	Loxeen (Pridiol methanesulfonate) is an orally effective central anticholinergic agent that can be used in Parkinson's disease research.
T76861	Cinpanemab	Cinpanemab is a novel human monoclonal antibody with affinity for residues 1-10 of $\alpha$ -synuclein, and can be used for research into Parkinson's disease and related disorders.

## Recombinant Proteins

ID	Product Name	Product Introduction
TMPY-02792	GDNF Protein, Human, Recombinant (HEK293)	GDNF (Glial Cell Line-Derived Neurotrophic Factor) belongs to the GDNF ligand family (GFL) and plays a crucial role in promoting the survival of motor neurons and axonal growth. It forms a GFL/GFRα/RET complex to regulate cellular functions. GDNF is important in the treatment of Parkinson's disease (PD).
TMPY-01419	GFRA1/GFRA1 Protein, Human, Recombinant (His)	GFRA1 is an essential survival factor for central and peripheral neurons and is crucial for the development of the kidneys and enteric nervous system. GDNF and NTN are its binding ligands, playing a key role in regulating neuronal survival and differentiation.
TMPY-03458	GFRA3/GFRA3 Protein, Human, Recombinant (His)	GFRA3 is a member of the GDNF receptor family and is a glycosylphosphatidylinositol-anchored cell surface receptor for GDNF and NTN. It mediates the activation of the RET tyrosine kinase receptor and is crucial for the development of the kidneys and enteric nervous system.
TMPY-02270	RET Protein, Human, Recombinant (His)	The RET proto-oncogene is a cell surface molecule that transmits signals for cell growth and differentiation. RET is involved in numerous cellular mechanisms, including cell proliferation, neuronal navigation, cell migration, and cell differentiation after binding with ligands from the neurotrophic factor family derived from glial cells.
TMPY-05510	BDNF Protein, Mouse, Recombinant (His)	BDNF (Brain-Derived Neurotrophic Factor) is a neurotrophic factor that binds with high affinity to the TrkB kinase receptor and with low affinity to NGFR. It promotes the survival, growth, and differentiation of neurons. The expression of BDNF is altered in neurodegenerative diseases such as Alzheimer's disease (AD) and Parkinson's disease (PD).
TMPY-02231	TrkB Protein, Mouse, Recombinant (His)	TrkB is a member of the NTRK family, with the highest affinity for brain-derived neurotrophic factor (BDNF). It is involved in neuronal plasticity, long-term potentiation, and apoptosis in the central nervous system.
TMPY-02078	HtrA2/Omi Protein, Human, Recombinant (His)	HtrA2 is a single-pass membrane protein belonging to the serine protease S1B family, exhibiting proteolytic activity against non-specific substrates like β-casein. Defects in HtrA2 are a cause of Parkinson's disease type 13 (PARK13).
TMPY-05446	Cd200 Protein, Human, Recombinant (hFc)	CD200 is a cell surface glycoprotein that suppresses alloimmune and autoimmune responses through its receptor, CD200R, which is primarily expressed on bone marrow cells. There is a close correlation between CD200-CD200R interactions, microglial activation, and PD (Parkinson's Disease).
TMPY-04356	GSK3B Protein, Human, Recombinant (His)	GSK3B is a serine-threonine kinase that belongs to the glycogen synthase kinase subfamily. It is involved in energy metabolism, neuronal cell development, and body shape formation. Polymorphisms in the GSK3B gene are associated with altered risk of Parkinson's disease (PD).
TMPK-01063	LRP-10 Protein, Mouse, Recombinant (His)	LDL receptor-related protein (LRP) 10 has been identified as a PD gene through genome-wide linkage and sequencing analysis, but its role in PD across different populations remains unclear.
TMPY-01355	Transglutaminase2/TGM2 Protein, Human, Recombinant (His)	TGM2 is a member of the transglutaminase superfamily. TGM2 plays a role in cell growth and survival through anti-apoptotic signaling pathways. Dysregulation of TGM2 may contribute to the pathogenesis of several neurodegenerative diseases, including Huntington's disease (HD), Alzheimer's disease (AD), Parkinson's disease (PD), amyotrophic lateral sclerosis (ALS), and neurological damage.
TMPY-02512	Alpha-Synuclein Protein, Human, Recombinant	Alpha-synuclein primarily exists in free or membrane-bound forms at the presynaptic terminals and is widely distributed within neuronal cell nuclei. In Parkinson's disease (PD), Lewy body dementia, and multiple system atrophy, the non-structural soluble alpha-synuclein can aggregate to form insoluble fibrils.
TMPY-00654	SNCA Protein, Mouse, Recombinant (His)	SNCA has been found to be associated with the pathophysiology of several neurodegenerative diseases, including Parkinson's disease (PD) and Alzheimer's disease (AD). SNCA accumulates in Lewy bodies and neurodegenerative inflammation. Overexpression of SNCA may lead to cell death in neurodegenerative diseases.
TMPY-03653	CTRL Protein, Human, Recombinant (His)	CTRL-1 belongs to the peptidase S1 family. Inhibiting CTRL-1 is beneficial in diseases where excessive activation of microglia leads to pathology. Activated microglia have been observed in various neurodegenerative diseases, including Alzheimer's disease (AD), Parkinson's disease (PD), amyotrophic lateral sclerosis (ALS), and multiple sclerosis (MS).

## Other Neurodegenerative Diseases

Besides the two most common diseases mentioned above, there are dozens of other types of neurodegenerative diseases that threaten human health. Researchers are developing new drugs targeting different conditions.

### Compounds

ID	Product Name	Product Introduction
T0349	Riluzole	Riluzole is a glutamate antagonist that also inhibits GABA uptake. It can be used as an anticonvulsant and to extend survival in patients with ALS.
T0407	Edaravone	Edaravone is a novel free radical scavenger that can inhibit MMP-9-related intracerebral hemorrhage in rats and is used in research on ALS (Amyotrophic Lateral Sclerosis).
T13553	Arimoclomol	Arimoclomol is a co-inducer of heat shock proteins (HSPs) that amplifies their production and helps rescue defective misfolded proteins. It is used in research for the treatment of ALS (amyotrophic lateral sclerosis).
T77484	Atibucimab	Atibucimab is a chimeric monoclonal antibody targeting CD14, composed of a mouse variable region and a human IgG4 Fc region, and is used for the treatment of ALS.
T0719	Tetrabenazine	Tetrabenazine is a VMAT inhibitor commonly used as an antipsychotic and to treat various movement disorders. It can be used in research on Huntington's disease (HD).
T62839	Dalazanemdor	Dalazanemdor is a positive allosteric modulator of the NMDA receptor, useful for research into Huntington's disease (HD), Alzheimer's disease (AD), and cognitive disorders.
T0412	Idebenone	Idebenone is a mitochondrial protector with neuroprotective effects, used in the study of Alzheimer's disease (AD) and Huntington's disease (HD). It can cross the blood-brain barrier and induce apoptosis.
T6111	Selisistat	Selisistat is an inhibitor of the deacetylase SIRT1, with efficacy and specificity, and can be used in research on neurological disorders such as Huntington's disease (HD).
T37621	Ezeproglind Disulfate	Ezeproglind Disulfate is a neurotrophic inducer used in research related to neurodegenerative diseases, including progressive supranuclear palsy (PSP), tauopathies, Alzheimer's disease (AD), and Parkinson's disease (PD).
T21715	Brd6688	BRD6688 is a selective inhibitor of HDAC2. In the CK-p25 mouse model, it can cross the blood-brain barrier and improve memory deficits associated with neurodegenerative lesions caused by p25.
T77565	Fluparoxan Hydrochloride	Fluparoxan hydrochloride is a highly selective and effective α2-adrenergic receptor antagonist that can be used to prevent, improve, or treat neurodevelopmental and neurodegenerative disorders.
T7706	LY404187	LY404187 is a selective, effective, and centrally active positive allosteric modulator of AMPA receptors, with research potential for various psychiatric and neurodegenerative diseases.
T22016	A-582941 Dihydrochloride	A-582941 dihydrochloride is a selective and blood-brain barrier-permeable partial agonist of α7 nAChR, with research potential for cognitive deficits associated with various neurodegenerative and psychiatric disorders.
T5463	Verdiperstat	Verdiperstat is an irreversible, selective, orally bioavailable myeloperoxidase inhibitor used for research into neurodegenerative diseases of the brain.
T36964	BML-259	BML-259 is an inhibitor of CDK5 and CDK2, and can be used in research for the treatment of tumors and neurodegenerative diseases.
T16782	Rofecoxib	Rofecoxib is a selective adenosine A1 receptor antagonist used for research into acute congestive heart failure and renal dysfunction, and it can also be used to study neurodegenerative diseases.
T9272	Xaliproden Hydrochloride	Xaliproden hydrochloride is a selective and orally active 5-HT1A receptor agonist, as well as a selective dopamine D2 receptor antagonist, with potential applications in research on neurodegenerative diseases.
T3320	Dizocilpine Maleate	Dizocilpine Maleate is a selective and non-competitive NMDA receptor antagonist used for the treatment of various neurodegenerative diseases where NMDA receptors may play a significant role.
T1062	Capsaicin	Capsaicin, a natural product extracted from chili peppers, is a TRPV1 agonist with activities including antitumor, anti-inflammatory, antioxidant, and neuroprotective effects.
T4212	Xmu-mp-1	XMU-MP-1 is a reversible and selective MST1/2 inhibitor with pro-apoptotic activity and potential applications in the study of neurodegenerative diseases.

## Compound Libraries

ID	Product Name	Quantity	Product Introduction
L1000	Approved Drug Library	2,800+	Approved Drug Compound Library: This collection of marketed drug compounds is suitable for high-throughput screening and high-content screening. All compounds have been approved by authoritative agencies such as the FDA, EMA, and NMPA. It serves as an effective tool for repurposing existing drugs and screening new drug targets.
L4000	Bioactive Compound Library	14,400+	A known collection of active compounds, suitable for high-throughput screening, high-content screening, cell induction, and target validation. All compounds come with detailed target information, and the target information is well-established. It serves as an effective tool for repurposing old drugs and screening targets for cell induction.
L4200	FDA-Approved Drug Library	1,700+	A unique collection of FDA-approved drugs suitable for high-throughput screening and high-content screening. All drugs are FDA-approved and come with FDA approval numbers, making them effective tools for drug repositioning and the screening of new drug targets.
L6000	Natural Product Library for HTS	4,500+	A unique collection of natural products, serving as powerful tools in drug development, pharmacological research, fingerprinting studies, and quality research. These products are suitable for high-throughput screening (HTS) and high-content screening (HCS), they are clearly sourced, structurally diverse, and provide comprehensive information.
L2620	Anti-Neurodegenerative Disease Compound Library	2,100+	Compounds related to neurodegenerative diseases, suitable for high-throughput and high-content screening. Targets include AchE, NMDA, CGRP, $\beta$ -secretase, $\gamma$ -secretase, Dopamine Receptor, Adenosine Receptor, 5-HT receptor, and others.
L2630	Neuronal Differentiation Compound Library	500+	Compounds related to neuronal differentiation can be used in the drug development for neurological diseases. Pathway targets include Notch, Wnt, Hedgehog, and others.
L7700	Neural Regeneration Compound Library	500+	A unique collection of compounds related to neural regeneration, suitable for high-throughput and high-content screening. These compounds target multiple signaling pathways, including Notch, MAPK, Wnt/ $\beta$ -catenin, mTOR, and more.
	CNSMPO Compound Library	30,000+	Potential bioactive small molecule compounds are powerful tools for research related to CNS diseases. They undergo stringent screening with multiple filtration processes to ensure better blood-brain barrier permeability and higher hit rates. These compounds exhibit favorable drug-like properties, high diversity, and are subject to rigorous quality control.
	xAutophagy-Targeted Library	17,000+	Dysregulation of autophagy is closely associated with many human diseases: cancer, neurodegenerative diseases, infections, cardiovascular diseases, metabolic disorders, pulmonary diseases, and aging. Targeting areas include ROS, VPS34, mitophagy, AMPK, mTORC1, MAPK, BCEN1, and others.
	Matrix Metalloproteinase Focused Library	2,000+	MMPs are potential targets for the treatment of neurodegenerative diseases and neuropsychiatric disorders. Based on stringent selection criteria of structural and physicochemical parameters, a screening library of potential matrix metalloproteinase inhibitors has been designed.
	NOTUM (Wnt Signaling) Library	4,000+	NOTUM is a carboxylesterase that has been shown to inhibit the Wnt signaling pathway by mediating the O-depalmitoylation of Wnt proteins. The Wnt signaling pathway is believed to play a role in neurodegenerative diseases such as Alzheimer's disease (AD).

## Recombinant Proteins

ID	Product Name	Product Introduction
TMPY-02881	RAGE Protein, Human, Recombinant	RAGE, a member of the immunoglobulin superfamily of transmembrane proteins, is a signaling receptor. Preliminary studies on the role of RAGE in renal dysfunction have focused on diabetes, neurodegenerative diseases, and inflammatory responses.
TMPY-00834	IGF1R/CD221 Protein, Human, Recombinant (His)	IGF1R is a transmembrane tyrosine kinase involved in various biological processes, including cell proliferation, differentiation, DNA repair, and cell survival. Regulation of the astrocytic IGF1R-MTOR pathway may be a viable therapeutic strategy for SOD1 ALS and potentially other neurodegenerative diseases.
TMPY-02767	TPP1 Protein, Human, Recombinant (His)	TPP1 is a member of the serine protease degradation protein family. Deficiency in TPP1/CLN2 is the cause of type 2 neuronal ceroid lipofuscinosis (CLN2), which is a progressive neurodegenerative lysosomal storage disease.
TMPY-00475	PPT1 Protein, Human, Recombinant (His)	Mutations in PPT1 lead to infantile neuronal ceroid lipofuscinosis (INCL), an early-onset neurodegenerative disease. PPT1 catalyzes the cleavage of thioester bonds in S-acylated proteins. Its deficiency results in the abnormal accumulation of thioesterified peptides in lysosomes, contributing to the pathogenesis of INCL.
TMPY-02196	VAPB Protein, Human, Recombinant (His)	VAPB is a single-pass type IV membrane protein that may play a role in vesicular transport. Defects in VAPB are a cause of type 8 amyotrophic lateral sclerosis (ALS8). VAPB defects are also a cause of autosomal dominant Finkel type spinal muscular atrophy (SMAF).

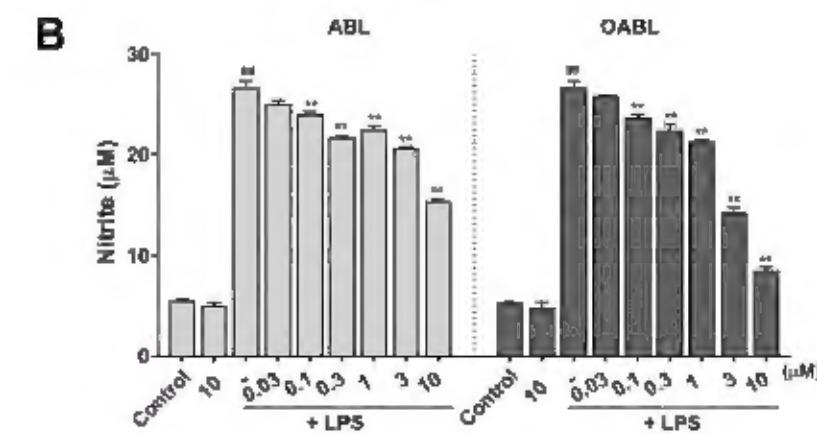
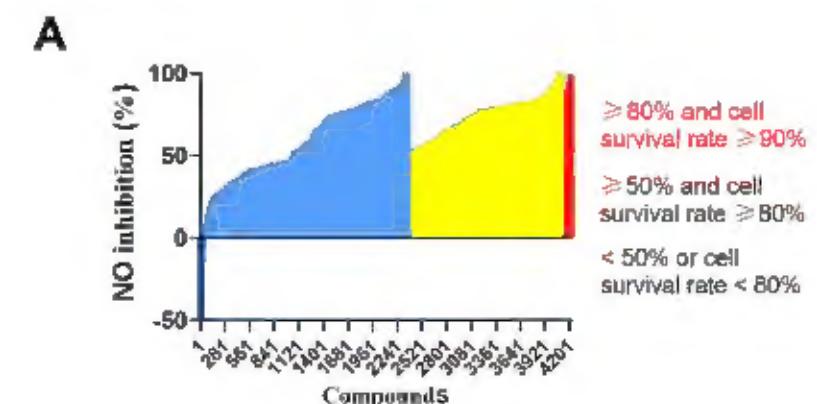
## Application

Tang JJ, Huang LF, Deng JL, Wang YM, Guo C, Peng XN, Liu Z, Gao JM. Cognitive enhancement and neuroprotective effects of OABL, a sesquiterpene lactone in 5xFAD Alzheimer's disease mice model. *Redox Biol.* 2022 Apr;50:102229.

IF: 11.4

Two compounds libraries were used in the initial screening of biological activity. One is a lab in-house compounds library of 1407 molecules, which has been constructed in Nov 2018, including 1209 natural products and 198 synthetic compounds. The other is the natural products library of 2800 molecules obtained from TargetMol Co. (Boston, MA, USA). Natural products ABL and OABL were obtained from the air-

Alzheimer's Disease is a neurodegenerative disorder where oxidative stress and neuroinflammation have been shown to be associated with neuronal loss and cognitive deficits. Until now, no specific treatments can halt the progression of AD. Researchers screened a total of 4,207 natural compounds from TargetMol's natural product library and other libraries. They discovered that OABL exhibited strong anti-inflammatory activity and good blood-brain barrier permeability *in vitro*. Further *in vivo* experiments demonstrated that OABL alleviated cognitive impairment in AD mice, significantly reduced the accumulation of amyloid plaques in the brain, the expression of A $\beta$ , phosphorylation of Tau protein, and the expression of BACE1. These results suggest that the natural compound OABL has potential for application in the treatment of AD.



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**Virtual Screening Small-molecule Library**

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